DOCUMENT RESUME

ED 308 319 CE 052 697

AUTHOR Bas, Daniel
TITLE Cost-Effectiveness of Training in the Developing Countries. Training Discussion Paper No. 19.
INSTITUTION International Labour Office, Geneva (Switzerland).
PUB DATE Dec 87
NOTE 27p.; Edited by the Training Policies Branch.
AVAILABLE FROM ILO Publications, International Labour Office, CH-1211, Geneva 22, Switzerland.
PUB TYPE Information Analyses (070)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Accountability; *Cost Effectiveness; *Developing Nations; Educational Assessment; Foreign Countries; Program Costs; *Program Effectiveness; Program Evaluation; *Training
IDENTIFIERS Africa

ABSTRACT

This document consists of an introduction, five sections, and a list of 12 references. The introduction explains why cost-benefit analysis is being applied to training in developing countries--even in those in which the expenditure for education has reached enormous proportions. The first section reviews the main providers and beneficiaries of education and training. The second section defines costs, outputs, and training effectiveness. The third section shows how cost-benefit analysis can be used to assess the effectiveness of various training activities in the formal sector (secondary schools and technical schools), and the fourth does the same for activities in the informal sector (traditional apprenticeship, training with production, nongovernmental organizations, and self-instruction). In addition, the fourth section includes information on the cost-effectiveness of training for women and three case histories of women trainees. The fifth section analyzes policies and draws some conclusions. (CML)

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TRAINING POLICIES

Discussion Paper No. 19

COST-EFFECTIVENESS OF TRAINING IN THE DEVELOPING COUNTRIES

by

Daniel Bas

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December 1987

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COST-EFFECTIVENESS OF TRAINING IN THE DEVELOPING COUNTRIES

INTRODUCTION

"If you think that training is expensive ... you can always try ignorance."

It has taken a long time for it to become fashionable to apply cost-benefit analysis to training, considering that it is an investment of the greatest importance. This is because education and training are often seen as an inalienable right which is not subject to any kind of bargaining. "Costs" and "effectiveness" are harsh precise words which may sound unseemly in an area rich in qualitative values and social and psychological symbols.

However, as a result of economic crisis, everyone has been obliged to spend money more carefully. The State, public and private training institutions, enterprises, individuals, those who provide training and those who benefit from it, those who make policies or apply them on a day-to-day basis, have all gradually come around to calculating and trying to obtain better value for money. In order to make wise decisions in the allocation of precious resources, it was inevitable that cost-benefit analysis, the comparison between sacrifices and results, would also conquer the world of training.

For the State, whose role is often paramount in this sector, the situation cannot continue as in the past. Expenditure on education has already reached enormous proportions (40 per cent of the operational budget of the Côte d'Ivoire, for example). Since there is a constant increase in demand and no likelihood of additional resources becoming available, it is essential to assess the effectiveness of existing systems and organisations and to promote new structures. No matter how valid investment in training may be, other spheres - health for example - are equally important. "To govern is to choose ..."

Practically everywhere the State is trying to make the main beneficiaries pay more of the training costs. It may impose training taxes on employers and it may - using a variety of incentives - encourage enterprise-based training. By reducing subsidies it obliges institutions to seek financial self-sufficiency by charging fees and making savings. The beneficiaries, who must now pay for their training, will be increasingly selective between the options on offer, seeking the best results at least cost.

Training institutions - wedged between the State which is becoming less generous and beneficiaries who are no longer willing to accept services of doubtful effectiveness - must thus exert a stricter control over their costs and more fully satisfy the needs of those who seek their services. The fact that many graduates of training institutes cannot find a job afterwards should give them food for thought.

But state, formal institutions and enterprise-based centres are only the visible part of the iceberg of training activities. We need to examine more closely the role and value of the subterranean world of informal and out-of-school training, which is the only recourse of many people excluded from the expensive system of modern education. In particular, traditional apprenticeship remains alive and well amongst craftsmen and

micro-entrepreneurs in the informal sector and is being rediscovered and better appreciated by policy-makers.

This chapter will be mainly concerned with training for employees and the self-employed in industry and services, mentioning only in passing training in agriculture or initial education. Emphasis will therefore be placed on the various forms of vocational training (technical or managerial) for the acquisition of skills in industrial trades, handicrafts and services, whether in the cities or the country, in large or small enterprises, in the formal or informal sector, in public or private enterprises.

After a brief review of the main providers and beneficiaries of education and training, the second section will provide some definitions of costs, output and effectiveness. The third and fourth section will show, for respectively the formal and informal sector, how cost-benefit analysis can be used to assess the effectiveness of various training activities. Some conclusions are drawn in the fifth section.

1. The main providers and beneficiaries of education and training

The State is a major provider of training through education ministries but also through many other ministries such as those with responsibility for labour, rural development and industry. It is also - or should be - a major consumer of training by preparing its officials to meet the challenges of a changing world. Furthermore, the State participates in training as policy-maker.

Institutions too, whether public or private, are big providers of training. They include in particular schools, institutes and vocational training or management training centres, productivity centres, and extension services for small and medium-sized enterprises.

Enterprises are both beneficiaries and providers of training, whether through well-structured in-house centres or by on-the-job training.

Individuals who receive training are extremely varied. They may be employees or self-employed workers. Special attention needs to be given to the most underprivileged categories (women, young people, disabled people, those working in the informal sector) to ensure equality of access to education.

The numbers receiving formal education in schools or training centres are very small in comparison with the multitude of workers who have acquired their occupational skills in non-formal or informal educational systems. Even within the formal educational structure only a very small part of public expenditure is allocated to vocational and technical education as compared with the funds spent on general education (see table 4.1). In terms of the numbers of students too, technical education plays a minor role. This can be seen in table 4.2, which gives information on six sub-Saharan African countries.

Non-formal education and training cover a wide variety of forms such as adult literacy programmes, agricultural extension schemes, community development, handicraft training, enterprise-based training, and apprenticeship. These not only contribute to the acquisition of skills but

play a significant role in wider domestic, health and civic education programmes which also promote individual development and integration into society. An important part of non-formal training takes place in the urban informal sector. Various ILO studies have shown that in some major cities more than half of total employment is in the urban informal sector and that most of the skills available had been acquired through traditional apprenticeship.

Correspondence courses provide an interesting example. A study on Brazil has shown that the number of people following correspondence courses was about ten times larger than that of students enrolled in secondary technical schools. It is certainly important not to overestimate the role of schools. Vast numbers of people are bypassed by the formal education system, as the example of Mauritania shows (table 4.3).

Table 4.1: Proportion of public expenditure on secondary education and vocational training (%)

Country	Year	General secondary education	Technical secondary education	Vocational training
Argentina	1978	27.2	6.5	0.8
Brazil	1974	62.7	0.3	3.2
Colombia	1978	20.9	4.9	11.1
Ecquador	1980	14.7	3.5	0.7
Mexico	1980	9.9	4.8	2.3
Korea	1982	24.2	4.2	0.5
Malaysia	1980	28.0	1.1	1.6
Morocco	1981	39.5	26.4	13.1
Philippines	1980	13.9	5.6	14.7
Thailand	1980	15.9	5.8	0.2

Source: G. Psacharopoulos: "To vocationalise or not to vocationalise. This is the curriculum question" (Washington, DC, World Bank Discussion paper, June 1986).

Table 4.2: Students in technical and vocational training compared with those in general education (%)

	Reference year	General education	Technical/ vocational training	Higher education	Total attending educational establishments
Mali	1981-82	97.3	1.4	1.3	100.0
Burkina Faso	1981-82	95.7	2.8	1.5	100.0
Togo	1979-80	98.3	1.1	0.6	100.0
Benin	1980	97.8	1.4	0.8	100.0
Gabon	1980	95.4	3.3	1.3	100.0
Guinea	1980	92.5	1.1	6.4	100.0

Source: B. Diallo: "Mesures pour la promotion de la formation au sein des enterprises en Afrique" (ILO, Geneva, Sep. 1985; mimeographed).

Table 4.3: Distribution of workers by level of education, Mauritania, 1977 (%)

Illiterate	77.8
Without education	0.3
Traditional education	11.9
Primary education	5.8
Elementary education	1.9
Secondary education	1.2
Technical/vocational training	1.1
Total	100.0

Note: Nomads are excluded.

Source: F. Achio and T. Alfthan: Planification de la formation en Mauritanie: Analyses et perspectives, ILO mission report (Geneva), 1984, unpublished.

2. Definitions of costs, output and effectiveness

Costs

The monetary costs of training can be assessed from the standpoint of those who dispense education (ministries, institutions, enterprise-based centres) or receive it (pupils, students, participants, families, enterprises, organisations). The costs for providers include wages, materials, supplies, and the buildings and their equipment. For trainees, the costs comprise boarding fees, school matriculation fees, some of the income tax paid, and so on. Knowledge of these costs is important. Planners need the information to weigh difficult options and to assess the cost of different components of a training programme. On this basis they can draw up plans concerning the building of classrooms, the supply of equipment, the number of teachers required and the number of students to be recruited. For institutions and enterprise-based centres, a detailed knowledge of costs is equally important

to make best use of time, space, human resources and material and financial means.

In the informal sector, monetary costs may be very small. Informal apprenticeship, for example, costs nothing to the State and very little to the craftsman (a little time and a few benefits-in-kind such as housing and food). The family of the apprentice pays a small fee to the teacher (in Africa, US$100-150).

More generally, there are considerable variations in costs per student between the formal and informal sector. Studies carried out in Brazil show that these costs in technical schools and centres which are supported by enterprises are on average between 4 and 20 times as high as those in the informal sector.

Another cost element is income foregone. Those who undergo training are not available for work and therefore incur a loss of earnings, which is why there are so many school drop-outs amongst the most underprivileged. Trainees also lose some of their free time which can be considered as a cost to them. Account should also be taken of what the State or the individual could have done with the money invested in training: what would have been gained if it had been invested elsewhere?

One cannot speak of "sacrifices" made to obtain training without including the unquantifiable concept of psychological cost. In this respect, individuals are not equal as regards training, especially of the modern and formal type. Access to this kind of education remains very difficult for the most underprivileged categories (women, rural inhabitants, those in the informal urban sector) even when it is completely free of charge or when some compensation is provided for income foregone. The fear of appearing stupid, of being punished or confined are important factors which can inhibit participants. And this is true not only for the most underprivileged: people who have had some experience of the world of adult education know it to be very anxiety-prone. Those who enter further training on a voluntary basis do so because they are aware that they are not perfect, and are subject to self-doubt and fears. The institutions that are most sophisticated in marketing know how careful they must be in selecting their reception staff in order to reduce tension, the psychological costs, amongst participants.

The reduction of costs, while an obviously desirable objective, is not necessarily easy to implement and strong resistance may have to be overcome. Confronted with scarce resources on the one hand and political pressure groups on the other, the policy-maker required to reduce expenditure all too often decides to make the cuts in ways which offer the least resistance at the political level: a secretary here, a photo-copying machine there, vehicle maintenance and fuel costs, and the like. This very quickly results in bottlenecks which make normal operations virtually impossible. The policy-maker has reduced his costs a little but his effectiveness a great deal. It is the ratio of costs to benefits which is important, not just one or the other.

Output

The term output, which is very frequent in economics, is also used in the economics of training. For a system or an institution, the output will be, for example, the number of students who have achieved the set objective, generally a diploma or success in an examination. A good internal output means that most of those who enter graduate with a diploma. When the skills

of graduates are well adapted to outside circumstances the system or institution is said to have a good external output. There are various ways of measuring this output: one can measure social mobility, occupational mobility, and physical results (for example, more production, fewer losses, or less idle machine time). All these measures are relevant but insufficient. Recourse is generally made to a common denominator which covers them all - the measurement of wages. More exactly, an attempt is made to measure the difference in wages which can be attributed to training, compared to either the wage which the individual would have received throughout his career without this training, or the wage of a control group. There are some important conceptual problems. Higher wages may be due not simply to a worker's training but also to other factors such as personality, experience, and the influence of contacts. Furthermore, this method supposes that the labour market is in a state of perfect competition and that the higher wages correspond exactly to higher productivity, which is far from always being the case.

Evaluation

It is a difficult task to evaluate the effectiveness of training.

- When should the evaluation be made? Participants are increasingly being asked to fill out questionnaires at the end of a session. This is a valuable practice although their assessments tend to be heavily conditioned by their reaction to the experience. Some participants may be enthusiastic because they like the style of the instructor and the atmosphere in the group but, in practice, they may not have acquired new skills. Others may be more reserved (perhaps because the instructor was less demagogic) but the fruits will be felt at work after a few months. Here is a comment drawn from experience: "At the office I cannot say a word; at home, it is my wife who is the boss ... The seminar is the only place where I can express myself ..." This may be an important benefit of the exercise. But how can it be measured?
  Another method is to carry out an assessment several months later by comparing the (by then more muted) reactions of the training beneficiary, his superiors and subordinates. But it can be difficult to distinguish between the impact of training and other factors which might have contributed to a change in the worker's effectiveness. If he is less productive, it is perhaps because he has personal problems. If he is more productive, it is perhaps because he has been stimulated by the birth of a child, or some other happy event.
- What should be evaluated? Some argue that an evaluation exercise can only measure results against clearly defined objectives. However, in practice, people's training objectives may be ill-defined or there may be several. Furthermore, the process of training may reveal unexpected benefits. It is precisely one of the purposes of training to show participants what their training objectives are.

Efficiency and effectiveness

To be effective and seen as such is a basic aspiration of any training system or institution. But what do we mean by effectiveness? Can we define criteria despite the wide variety of contexts? The principal criterion is undoubtedly the usefulness of the system or institution to society and its contribution to national development. If this concept is used, the volume of activity, the number of graduates or other quantitative data are not sufficient in themselves to allow conclusions to be drawn regarding effectiveness; a qualitative assessment must also be made.

The concept of efficiency is significantly different from that of effectiveness. Efficiency is the capacity to maximise outputs and minimise inputs. To reach the same volume of production (courses, diplomas, publications) institution A may need less time and money than institution B. It will be said to be more efficient than institution B.

A conflict sometimes arises between effectiveness and efficiency. However, in the long term, since the concepts are related and exert a mutual influence, the objective should be to be both efficient and effective at the same time.

In order to show the relationship between cost-benefit ratios and wider concepts of social utility and effectiveness, it may be useful to refer to three models of training systems or institutions.

The first model comprises systems or institutions which are mainly product-oriented, and which have a production mentality. They endeavour to deliver good quality products or services (courses, diplomas, research, publications) which are not open to criticism, since the respective authority is convinced that it knows the needs of the beneficiaries better than they themselves do. The final social utility of the products is considered self-evident.

The second model is market-oriented. The "market" should here be understood in the wide sense of target groups rather than in the strict commercial sense of a group of potential buyers. Products or services are designed and supplied to satisfy the aspirations and needs of clients. The final social utility is defined in terms of the receivers' perception of it, a situation which can result in a chase of passing fashions.

The third prototype of training systems or institutions is society-oriented. In this case, the ultimate objective is to enhance the social and economic development of the country. Training in these institutions is usually conducted with a deep sense of civil responsibility and without fear of raising questions which may go against the conventional wisdom.

These three models - passive, reactive and pro-active - may be seen as marking various stages towards effectiveness.

It is not easy to be "pro-active". Systems and institutions often tend, moreover, to slip from pro-activity to reactivity and then passivity. When the initial motivations of a major project have lost their momentum, bureaucratisation and stagnation threaten to take over.

Although the passive bureaucratic model must be condemned without hesitation, it is more difficult to decide between the reactive and pro-active models. There is a reverse side of the coin in each case and it is more advisable to seek a balance between the two. The graduates of "reactive" institutions generally find it easier to obtain jobs. And defining the ultimate purpose of training is not simple. Many training systems or institutions are content to say that their mission is to provide education, advice or research to improve skills. However, skills are only intermediary products: the number of people trained or studies produced is not an adequate indicator of achievement.

For example, if we look today at the very difficult situation of the countries of the Sahel, we can say that the "ultimate goal" of training institutions can be described in simple harsh terms: people must have enough

to eat. How can such institutions contribute to this objective? What strategy should be adopted? At what level should action be taken (villages, non-governmental organisations, local authorities, ministries). What should be the content and method (by correspondence, radio, functional literacy)? What kind of students (and in particular, how many agronomists and agricultural technicians) What kind of technical co-operation? Who should be responsible for the management of the ports and railways which enable the land-locked countries to breathe? How can needs in the informal sector best be identified and satisfied? How can self-employment and the entrepreneurial spirit be promoted? And what about maintenance and repairs?

The effectiveness of a training system or institution must be measured in terms of its contribution to the establishment of specific solutions to problems on the path towards the final objective ("people must have enough to eat"). To estimate the cost-benefit ratio it is more useful to know to what extent training has contributed to the reduction of idle machine time or of the waiting time before vessels are unloaded in a port than to know how many Ph.D's in management have been produced by the educational system. Other "ultimate goals" such as reducing the use made of expatriates, the better distribution of drinking water in rural areas or the improvement of housing are formidable but measurable tasks to which a training system can contribute.

3. Cost-benefit analysis and training in the formal sector

Initial training

Formal initial training offers the largest number of examples of studies of the cost-benefit ratio. Account will be taken in this section of ordinary secondary schools (high schools, gymnasiums, general education colleges), "vocationalised" secondary schools (those which have added vocational training to the general education programme) and, finally, technical schools proper. This taxonomy raises a problem which has been discussed at length. A World Bank study (Psacharopolos 1986) states the question in clear terms: "Should education be vocationalised or not?" Governments practically everywhere have attempted to do so, in particular by diversifying the contents of secondary education.

"Vocationalisation" is expensive if only because of the cost of buildings and workshop equipment, laboratories, and so on. A recent assessment of technical secondary education in Kenya found that industrial training is twice as expensive as other kinds of training in terms of unit costs per pupil of training and supplies. If reference is made to the unit costs of investment, the difference is even clearer: the figure is five to six times higher. Table 4.4 shows the difference between the unit costs of investment in classrooms (construction and equipment) by type of education in five countries, and table 4.5 shows the total unit cost (investment and running costs) in secondary educational establishments in selected countries, by type of education.

Table 4.4: Unit investment costs in classrooms, by type of education (Investment in ordinary classroom = 100)

Country	General secondary education	Scientific education	Industrial training
Malaysia	100	467	-
Barbados	100	243	695
China	100	480	-
Jordan	100	203	614
Kenya	100	-	550

Table 4.5: Total unit costs in secondary education (Overall secondary education = 100)

Country	Overall secondary education	General education	Vocational training
El Salvador	100	77	152
Malaysia	100	-	350
New Guinea	100	-	321
Philippines	100	97	128
Indonesia	100	68	132
Honduras	100	20	146
Sierra Leone	100	44	155
Asia (selected countries)	100	70	130

The World Bank study mentioned above is particularly critical about the cost of materials and equipment. However, it should not be forgotten that these are unit costs per student. A large-scale study carried out in 1,340 schools in Latin America in 1978 illustrated the decisive importance of the size of schools. The vocational schools are markedly more expensive in terms of unit cost per student. But this is due less to the expense of equipment - in Brazil, for example, where a classroom of 50 square metres costs more than $10,000, any vocational equipment assigned to the classroom costs less than the building - but rather to under-use of this equipment by an insufficient number of pupils. Furthermore, each machine may require a different instructor who is himself under-used.

Is the extra cost of vocationalising secondary education justified by the benefits obtained? The answer seems to be no. In particular, graduates of vocationalised schools do not seem to find jobs more quickly and even experience slightly longer periods of unemployment - for example, in Colombia, 25 to 26 weeks before the first job against 21 to 22 weeks for graduates of the general courses. Moreover, there are no significant differences in pay one year after graduation.

The introduction of vocational education in secondary schools has thus not proved a very worth-while investment. Thus, in Tanzania the rate of return achieved in general education courses is practically double that of specialised training. Table 4.6 shows comparative rates of return in secondary establishments in five countries. The rate of return takes account of all training costs (for society and for individuals) and measures the return by comparing the earnings of persons trained with those of a control group which did not receive the same training.

Table 4.6: Rates of return in secondary education

		General education	Vocational training
Cyprus	1975	10.5	7.4
	1979	6.8	5.5
France	1970	10.1	7.6
Indonesia	1978	32.0	18.0
Liberia	1983	20.0	14.0
Taiwan	1970	26.2	27.4

Further training

Systems and institutions providing further training have been less frequently the subject of rigorous studies on cost-benefit ratios than initial training schools and establishments. However, this gap has recently been partially filled by the World Bank, in particular by an economic assessment of the national training system in Colombia, SENA (Servicio Nacional de

Aprendizaje). SENA was set up in 1957 by the Ministry of Labour. It is financially autonomous and its main resources come from a tax of 2 per cent levied on wages. Its growth has been impressive - from 1,750 persons trained in 1958 and 23,000 in 1965 to more than 300,000 a year in the 1980s. SENA began with two types of courses: an apprenticeship programme for young people and short seminars for adult workers. Today more than 1,000 courses are offered by SENA including longer adult courses. All economic sectors and all skill levels are covered by the system. The programmes have just one point in common: participants have a job (including apprentices who have a contractual relationship with an employer) and the time spent in the classroom never exceeds 50 per cent of the total training time.

The World Bank study combined the direct costs of training and income foregone with estimates of income and productivity of SENA graduates, and compared these with a control group which did not receive the same training. It was able to calculate the rate of return for five types of SENA courses as well as the comparative rates of return for short and long programmes. The main conclusions of the study are encouraging for SENA:

- The overall financial rate of return for SENA courses is 14 per cent, which is clearly higher than the average rate obtained by investing capital and which also exceeds the rate of return to secondary education in Colombia (9 to 10 per cent, according to Psacharopoulos).
- The rate varies according to the length of courses: it is higher for long programmes (17 per cent) and for students who have greater experience and basic school training (up to 30 per cent). SENA therefore appears to be a complement rather than a substitute for other forms of investment in human capital.

In Africa, the World Bank has also assessed the costs and effectiveness of training systems in education, for both technical and management training. The main impression given by institutions in the region is their great fragility. This is principally due to an overdependence on the State. Few institutions have been forced to compete in the market and they have rarely adapted their programmes to the concerns of their client enterprises.

However, Africa also provides one of the best examples of a results-oriented programme in which particular attention has been given to measuring the operational costs and benefits. This is the national training programme in maintenance developed by the Ethiopian Management Institute with assistance from the ILO. On the basis of a careful count of idle machine hours in 250 enterprises before and after the action training programme, it was estimated that an investment of $200,000 in training costs had produced savings of $50 million.

India has paid a good deal of attention to the cost-effectiveness of its vocational training system. A study commissioned by the Ministry of Labour on apprenticeship estimated a cost-benefit ratio for training of 3.3 (total earnings of trained workers during the 37 years of their working life to the total cost of their three years of training). Another study has analysed five types of training: normal apprenticeship, apprenticeship for graduates, initial training of craftsmen, continuous vocational training and the training of supervisors. The rates of return for these five categories are estimated respectively at 4.2 per cent, 12.9 per cent, 14.3 per cent, 0.3 per cent and 0.9 per cent. The last two results can be explained by the high cost of training and the older age of participants (average age 26 and 39 respectively) which means that higher productivity due to training extends over fewer remaining years of working life.

When interviewed, former participants were very enthusiastic about the usefulness of their training in obtaining and carrying out their work. More than 90 per cent said it had been useful or very useful. They rated training less highly for gaining promotion, though about 80 per cent still thought it useful or very useful. Employers, for their part, were very enthusiastic about continuous vocational training and formal apprenticeship, but less so about craftsman training. This was because they generally preferred to train people within their own enterprise.

Enterprise-based training

The initial and further training provided by state-run institutions has not always come up to the expectations of enterprises, even though in one way or another enterprises contribute a large share of the finances. For example, Brazil obliges industrial enterprises to fund the National Industrial Training Service (SENAI) by paying a tax of 1 per cent on wages (1.2 per cent in enterprises employing more than 500 employees). It is however possible to deduct up to 80 per cent of the levy provided that this amount is used for training. Similarly, a 1977 law in the Côte d'Ivoire imposed a training tax of 1.5 per cent on wages but this is waived for enterprises which set up their own training programmes. Twenty enterprise-based training centres have already been set up in the country.

However, a reduced training levy is not the only reason why enterprises have set up their own training programmes. They often allocate more funds to training than they are legally required to do. The principal reason is that the school or para-scholastic system is not always sufficiently geared to the world of work, and expensive training does not always lead to the acquisition of job-adapted skills.

Recommendation No. 150 of the ILO encourages enterprises to assume the responsibility of training workers in employment. Enterprise-based training is most developed mainly in occupations that are too specialised to be covered by schools - water and electricity services, railways, aviation, petroleum, and banks, for example.

But enterprise-based training has spread to other sectors. The rapid progress of technology and the need for structural adjustment have increasingly demanded appropriate training, retraining and conversion of skills. School and para-scholastic institutions are less well-placed than the enterprise itself to follow developments with all the flexibility and speed required to maintain an adequate stock of skills. On the other hand these institutions can make a valuable contribution, for example, by providing advice and assistance for the organisation of internal training programmes and the training of in-house instructors. The example of INDEFE in Algeria deserves emphasis in this connection. INDEFE (National Institute for the Promotion and Development of Enterprise-based Vocational Training and Apprenticeship) was established in 1981 to provide teaching assistance to enterprises, train their trainers as well as apprenticeship masters, help them calculate their costs, choose their equipment, and design and evaluate their programmes.

Enterprise-based training can be provided in internal centres, with equipped classrooms and instructors who are employees of the enterprise. On the other hand a small team responsible for training can use and supervise external resources for courses and seminars adapted to the needs of the enterprise which can be carried out in the plant or outside. Finally, enterprise-based training is also "on-the-job" training - that is, training

provided at the workplace in which the individual develops his skills by making direct use of production equipment under the guidance and supervision of a superior. This on-the-job training may be structured as a practical complement to theoretical training received elsewhere.

The costs and achievements of enterprise-based training are not easy to evaluate. Even when all training takes place within the enterprise, very few budgets cover more than the wages of staff exclusively assigned to training and the cost of teaching materials and equipment. A survey of 130 enterprises carried out in the United States (Mangun, 1984) points out that none had included in its calculations the wages and reduced productivity of internal instructors assigned on an occasional basis nor the time of supervisors taken up by training activities. The same survey found, quite unexpectedly, that managers showed little interest in assessing the costs and benefits of training. It would seem that training is carried out because some highly placed member of the firm believes in it rather than on the basis of any serious economic evaluation.

Very few such evaluations are available. An exception is a Brazilian study on the costs (unfortunately not the benefits) of five major enterprise-based training centres. Estimating costs is itself a difficult task. A value has to be assigned to land and premises. Some enterprises have machines used specifically for training while others use machines for training purposes when they are not otherwise operating. In one of the cases not only the wage earners employed as instructors receive wage supplements but workers themselves are given bonuses to encourage them to follow courses. Taking all these elements into account, the study divided total costs into two main components: one-quarter for administration and three-quarter for training, of which 80-90 per cent was spent on instructors' pay.

From being an economic instrument in the hands of employers, enterprise-based training has increasingly become a social instrument in the hands of governments to help reduce the alarming problem of youth employment. Enterprises may find themselves as in the Federal Republic of Germany, turning into open-door institutions, training more young people than they can actually recruit as workers. More and more countries are introducing legislation to provide financial incentives for enterprises which accept young people as trainees and then take them on as employees. In Togo a 1983 Act established regional vocational training and further training centres (CRFPP) to re-invigorate apprenticeship. These centres provide the complementary theoretical training for apprentices, establish with the industries concerned the duration of the alternating periods of classroom and practical training, supply teaching materials for enterprises and provide an advisory apprenticeship inspectorate.

Under a 1981 Act in Algeria, the pre-wage of apprentices is paid by the State during the first six months and is then progressively taken over by the employer. Over the same period the employer is exonerated from the payment of social contributions.

It should however be emphasised that legislation formalising apprenticeship is often ineffective. Thus, in the Côte d'Ivoire, apprentices who have signed a legally valid contract account for only 1.2 per cent of the workforce in the modern sector, whereas traditional apprentices in the informal sector are legion. In Burkina Faso, only 61 apprenticeship contracts were signed between 1978 and 1980, 86 between 1980 and 1982 and 29 in 1983-84. In Mali, 28 contracts were registered between 1975 and 1978 and 28 between 1980 and 1983.

The developments noted in the present section have essentially concerned large-scale enterprises in the modern sector. The establishment of an internal training centre, a specialised training service or even apprenticeship contracts which conform to the legislation in force, is rarely within the means of a small enterprise even if it is already well-structured and perhaps considered as part of the modern sector. For these small and medium-sized enterprises, most developing countries have created specialised extension services which offer integrated assistance, including training. Their effectiveness is uneven. Many of these centres are fairly bureaucratic and their staff is made up of young graduates without experience who have difficulty in establishing contact with small entrepreneurs.

Mention should however be made of the entrepreneurship development programme of Gujarat State in India. The programme was able to train more than 6,000 candidates in setting up their own business. The failure rate amongst those who were trained was six times less than for entrepreneurs who had not been trained (3.6 per cent against 21.4 per cent). The cost of training was only $150 per person.

4. The hidden part of the training iceberg: The informal sector

Traditional apprenticeship

The craftsman's workshop in the informal sector is a place in which the skills of a trade are acquired. Traditional apprenticeship is a training school for working life which allows young people to come into contact with the real conditions of work and the trade. The integration of training and production offers undoubted advantages as regards costs and efficiency.

Apprenticeship, in addition to being an economic necessity, also has a social function, particularly in Africa. The craftsman or entrepreneur has a great responsibility to the parents of the apprentice and must endeavour to provide, over and above the vocational training, an education for his apprentice in the widest sense of the word.

Apprenticeship is a source of training which is almost entirely free of charge, as compared with the cost of training in the technical establishments. It is generally the parents who pay the craftsman and the amount is usually less than $150. In the best cases, the craftsman devotes some time to training, provides meals, accommodation and sometimes a little pocket money. In exchange he receives cheap labour and a certain amount of prestige.

In many cases, however training is scanty, incomplete and unsystematic. Moreover, neither the workload nor the equipment of the workshop allow training to be very intensive. But traditional apprenticeship still remains the major source for the aquisition of skills in the informal sector. A study on French-speaking Africa shows that 84 per cent of employers had received traditional apprenticeship training compared with 7 per cent who had been apprenticed in the modern sector, 2 per cent in a vocational training centre and 4 per cent in a combination of traditional apprenticeship and one of the other two forms. The same study was able to examine the relationship between management performance and the skills of the small-scale employer. The best economic performances - measured by such variables as profit and value-added - are obtained by employers who received technical school training combined with traditional apprenticeship.. They are closely followed by those who

completed secondary studies but who also had practical training in a workshop. It seems that a combination of the two systems gives the best results. In fact, the trend is moving in this direction as a result of restructuring. Many workers who have been "eased out" of the modern sector are moving into the informal sector and will encourage the transformation of its production and management methods.

Despite its shortcomings, traditional apprenticeship can be effective. In 1985 a round table was held in Abidjan attended by young jewellers trained entirely in the informal sector and their counterparts who had graduated from the Training Centre of Jewellers of Abidjan with vocational proficiency certificates (CAP). The conclusions were as follows:

- training is more complete in the workshops of the informal sector where apprenticeship covers all aspects of the trade;
- the jeweller trained in the informal sector has a greater chance of finding a job. Many young graduates are unemployed;
- the jeweller trained in the informal sector has had contact with customers. In particular, he knows how to bargain;
- the cost of training in the Centre is not commensurate with the results. In addition to the operating costs of the Centre, the groups of 12-30 students who enter each year are granted a monthly allowance of 60 dollars.

Similarly, CIADFOR (African Centre for the Development of Vocational Training) examined the case of carpenters in the Côte d'Ivoire and also concluded that traditional apprenticeship offers a particularly high benefit-cost ratio in comparison with classic training centres.

Training-cum-production

Training-cum-production is applied above all in the construction sector and in projects set up for underprivileged youth. The training-cum-production method consists in allowing young persons to acquire occupational skills by carrying out real, specific and repetitive work.

It is desirable for this practical and direct training to be accompanied by theoretical courses.

The method has the advantage of:

- being more motivating for young persons who will be proud of their contribution to the completion of specific and useful projects;
- creating a team spirit amongst participants which will facilitate their integration into the enterprise;
- theoretically providing training at the lowest cost since it does not interrupt marketable production;
- being a possible source of employment if - after completion of the project - trainers and participants set up their own enterprise, with the project equipment constituting an initial input in kind.

Unfortunately, training-cum-production projects are generally production rather than training-oriented. Training is only a by-product of the production process and the project is too often conceived solely as a short-term response to a serious and urgent unemployment situation.

An improved strategy, in particular through the greater integration of programmes into national development plans and by better training of programme

promoters and managers, would allow these projects to be turned into truly "production school enterprises". This would increase the training value of work in occupations in which participants would have some chance of subsequently finding lasting and useful employment opportunities.

Training by non-governmental organisations (NGOs)

Although the work carried out in village communities or the urban informal sector by official national and international agencies should not be underestimated, it must be recognised that assistance work at the grass-roots level remains the privileged domain of the NGOs. The most underprivileged need help from people who speak their language, who share their difficult conditions of life, who encourage their participation and who are neither too well-fed nor too well-paid. Such people are often found among the volunteers of the NGOs.

On the other hand NGOs have their weak points: they are often unwillingly accepted by governments because they operate in a somewhat anarchic manner and without much concern for the guide-lines of development plans; they rarely have access to sources of information and their left hand is often unaware of what their right hand is doing.

There are numerous examples of efforts made on behalf of the most under-privileged which instead of being complementary in fact conflict and invalidate one another. One case amongst many has involved the United Nations Development Programme, the ILO, United Nations Equipment Fund, the Senegalese Government (Ministry of Social Affairs and Ministry of Planning) and NGOs. It is a project on "Pre-co-operative groups of women in rural environments". Millet mills, financed by UNEF, are managed by the women with the help of the project and the time saved allows them to pursue new activities, in particular market gardening. The profitability of the mills has been studied on the basis of a "market" of four villages. Unfortunately, well-intentioned NGOs acting independently have sometimes set up other mills in the zone unknown to the Government, thus invalidating all the calculations of the feasibility study.

A greater effectiveness by NGOs requires the further training of their own executive staff and volunteeers, the provision of good teaching materials adapted to low literacy levels and the establishment of good information networks.

Self-instruction and the new
educational technologies

This is without doubt the biggest and most difficult sphere in which to assess the cost-benefit ratio of vocational training. How to separate the grain from the chaff in all the "Do-it-yourself" manuals which proliferate throughout the world? The ILO has made a contribution by its "Improve your business" series which helps small entrepreneurs to diagnose their own problems and learn on their own the techniques needed to improve the running of their businesses. Since the 1960s the ILO has also used the radio serial "Double your money", which was tested in Uganda, to transmit management concepts to small entrepreneurs. As for correspondence courses, it was noted at the beginning of this chapter that in Brazil there are ten times as many participants in such courses than pupils attending secondary technical schools. In Africa, too, NGOs such as Inades-Formation have for a number of years offered correspondence courses. A correspondence course which costs

individuals between $30 and $50 can easily increase their remuneration by $10 a month. The course thus pays for itself quickly.

The new educational technologies (cinema, radio, television, video, slides and so on) can be used as support material to "Do-it-yourself" teaching manuals (programmed or not) and correspondence courses.

A clearer idea of costs is now emerging. A study by CEPAC (Centro de Producción Audiovisual para la Capacitación, Mexico) on the cost-benefit ratio of using video cassettes for training purposes gives the following figures:

- programme cost per minute $39;
- cost by course/participant $11;
- cost by hour/participant $0.6.

A simple calculation shows that in this example 4,000 people followed a course of approximately 20 hours which cost them a modest $11.

It is well-known that images, colour and sound are powerful means to capture the attention and to improve the retention of what is taught. However, there is one great disadvantage: it is not easy to replace the human presence of the instructor. One example will illustrate this point (see box 4.1).

Box 4.1: The pitfalls of audio-visual training material

> The following example comes from a management seminar organised in June 1983 in Malabo (Equatorial Guinea) by the Ministry for the Promotion of Women, with the assistance of the ILO, for women engaged in income generating activities. The trainer, who was using slides to convey his message to the least literate participants, noticed that there was considerable agitation at the back of the classroom. The slide which had just been projected concerned the presentation of goods. The message designed to be transmitted was: however modest your stall, make sure it is clean and properly arranged and place in front the goods which will earn you the most. Give them the place which they deserve. The illustration showed bottles in the front row, with boxes at the back, without stipulating the contents. The trainer was able to obtain a translation from the "fang" dialect of the cause of the agitation: "The expert was quite right, it is alcohol which earns the most" they said. Without the presence of an instructor, the distorted message would have produced unfortunate effects which were not at all intended ...

This example illustrates the need for caution but it should not be interpreted as a justification for conservatism in education. The presence of an instructor is important but also very expensive. With television for example, the cost of preparing a programme is high but the broadcast can subsequently reach millions of people. Airline pilots cannot be trained by television or radio but for literacy campaigns in French or English, for example, the cost becomes so small that it is easy to overlook possible defects and poor quality.

Cost-effectiveness of training for women:
Some specific characteristics

All the remarks made earlier concern or should concern women. But equality of access by women to education and training, although established by legislation in practically all countries, is far from being a reality, whether for formal or non-formal systems.

Many training programmes for women are considered expensive because they are or must be organised separately outside the normal education system, or as pilot projects or tests. Their experimental nature, short duration of life and limited replicability has not yet allowed a serious study to be made of their cost-effectiveness. Moreover, the objectives of women's training programmes are multiple, mixing social and economic aims which makes evaluation very difficult. Although it is possible to assess the impact of a course on levels of pay, productivity, literacy and awareness of women's legal rights, how can we measure such important outputs as greater self-confidence, greater capacity to take decisions and exercise a leadership role, or the enhanced awareness of one's conditions of life and work and the capacity to influence them? Three personal experiences (see box 4.2), the stories of Dolores, Rosa and Marie-Louise, are significant in this respect: is it possible to identify relevant indicators for the costs and benefits of their training seminars?

Box 4.2: The case-histories of three women

The three case-histories are drawn from different ILO seminars on management training for women heading micro-enterprises. The seminars were held in Equatorial Guinea (1983), Central African Republic (1984) and Gabon (1985).

Marie-Louise and the virus of training

The shortest and most moving story comes from the Libreville seminar. Marie-Louise sells palm wine in the market. She is the least literate of the group. To follow the seminar is not always easy but Marie-Louise has a thirst for knowledge. Each day the trainer wonders whether she will come back ... and yes, she does. She remains faithful to her post. And she will be there until the end. On the last day she will simply have the following observation written on her appraisal sheet: "This has done me good and I feel happy". Who would claim that this result is not a valid one? Yet it was not one of the objectives and certainly is not quantifiable?

If one adds that the "Association of Gabonese Business Women", which is now operational, was set up during the coffee breaks at the seminar, one indeed wonders how such unexpected results can be measured.

Rose and the mystifiers

On the second day of the Bangui seminar, the trainer was confronted with an urgent and unexpected problem. As successful working women, the participants were all involved in trying to

promote the role of women and were frequently called upon to sit on political or administrative bodies where they were greatly outnumbered by men. They often lacked the confidence to defend effectively the point of view of women around the table. The men would snub them or halt them in their tracks by quoting some grandiose economic theory or sophisticated formula. They urgently wanted to learn about, for example, inflation, the difference between production and productivity, and the balance of payments - that is, much more about macro-economics than micro-economics. The trainer had to jump in without any preparation. He had his reward when six months later, Rose, one of the women, said to him "You know, now I am not afraid in meetings any more. I realise that the men also confuse production and productivity and that they often use words without knowing what they mean." Demystification had succeeded. A problem had been resolved, but how can we measure the result?

Dolores, agent of change

The ILO seminar for the 30 or so women elected to take responsibility for the promotion of women in all regions of Equatorial Guinea was strongly supported by the President of the Republic. He declared in an important speech which was broadcast: "The development of our country will be achieved through our women or there will be no development." During the course of a moving event held at the end of the seminar, he insisted on delivering personally to each participant their diploma which stated that they were "agents of change" (agente de cambio).

The effects were not long in appearing. The delegate from the South, returning to her town immediately after the closing session of the seminar, came upon a familiar scene. Two policemen had seized a fish from the hands of a stall-holder and were trying to avoid paying simply because they were wearing uniform. The woman selling the fish defended herself and people gathered together in the market place - but without much conviction since this kind of incident always ended in the same way. "The strongest always gains the upper hand." But they had not counted upon our fiery delegate who had just been declared an "agent of change". She cut through the crowd and thrust her brand-new diploma under the nose of the two dishonest policemen. "You cannot carry on like that. Look at this document: it is a diploma certifying that I am an agent of change which has just been given to me by the President of the Republic himself during an event which you have all been able to hear on the

> radio. Look at this, this is the signature of the President: he wants change and I am here to see that it is carried out. Give the fish back to the woman. You know very well that you do not have the right to take it without paying." Impressed by so much passion and the inscriptions, signatures and stamps on the diploma, the two men gave the fish back and withdrew pathetically as the crowd, which had regained its courage, murmured reprovingly ... It was not exactly clear what an agent of change was but it was better to see which way the wind was blowing and go in that direction ...

There is another aspect which is not measurable but which is nevertheless clear to those who have had the advantage of teaching or advising women. These women have little time to spare and certainly none to waste: for them the psychological and opportunity costs of training are enormous. They have had difficulty in gaining access to training. They have never dared hope that they would be successful. They are thus enthusiastic, motivated and demanding once the initial stress period has passed. They immediately try to apply the teaching. They appreciate good work. They help and encourage, participate and protest. They are quite different from certain audiences made up of executive staff who have been sated and saturated with training and who easily become bored in a seminar. All this will inevitably be reflected in the cost-benefit ratio when we are in a position to measure it with greater accuracy.

5. Policies

The State, as policy-maker, must decide between several strategic options for training. It must in particular answer questions like the following: who pays for the training and how? What type of training should be provided? Should new centres and schools be opened? Should initial training be vocationalised? Should enterprise-based training be encouraged? Should traditional apprenticeship be improved? Should alternate training be promoted? Should self-instruction be given support? Should the mass media and new educational technologies be developed? Comparisons of the different cost-benefit ratios should be the basic tool for such decisions.

It should be noted, however, that too often the State itself sets a bad example, with a poor cost-benefit ratio for the training of its own officials. Legislation to promote continuous training frequently does not apply to public officials: the State as an employer does not apply what it preaches to other employers. The legal provisions establishing training levies are motivated not only by the desire to promote development of the country's human resources, but to an even greater extent by a concern to make enterprises carry the financial burden.

Nevertheless, taxes to fund training have generally had positive results. They have made it possible to redistribute costs so that they are borne by the principal beneficiaries. They have made all the parties involved aware of the problems of training. They have encouraged employers to maximise their investment by taking a close interest in training so as to increase its effectiveness. Thus enterprises have progressively organised training themselves or they have exerted greater influence on the management of institutions or systems which they help finance. They have been led to express their views on needs, programmes and results.

However, some reservations should be made. Firstly, some big enterprises did not wait for legislation to be introduced before setting up training activities and allocating up to 3 or 4 per cent of their aggregate wage bill. They then found that they were allocating far more funds than the law required. They immediately decided to reduce expenditure to a more modest percentage (generally 1 to 2 per cent). This was an unexpected effect of so-called incentive measures.

Secondly, legal provisions have not really affected small and medium-sized enterprises in the modern sector and still less the micro-enterprises of the informal sector. Sometimes they are expressly excluded from the provisions of the law which often establish a minimum threshold of 10 to 20 wage earners; or they are covered by the text of the law but are unable to pay the tax; or finally, they pay the tax but do not know how to use the money or the collection bodies do not know how to use it appropriately on their behalf.

Thirdly, the national training bodies and systems, which are very often financed by taxes paid by large enterprises, have rarely interested themselves in small and medium-sized enterprises, especially since the big enterprises often have representatives on the executive bodies of the institutions in accordance with the principle of tripartism. Micro-enterprises in the informal sector have been totally neglected. It is true that national institutions such as SENA in Colombia and INCE (National Institute of Educational Coordination) in Venezuela have launched major programmes for the vocational training of marginalised populations in urban suburbs [respectively the Urban Popular Vocational Training Programme and the Occupational Training Programme] but it is well known that matters have not always proceeded without sharp internal discussions. Furthermore, the Occupational Training Programme is now the subject of an agreement with the Catholic Church which marks a clear disengagement on the part of the Institute.

It is a disengagement which may perhaps have the seal of wisdom. Training in the urban informal sector is not always an appropriate activity for a state institution which finds itself alone in the front-line. The churches, the NGOs, and the private foundations are looked upon with less distrust, provide a more complete package of benefits (credit, culture and leisure, literacy campaigns, social, health, civic, and domestic education, and so on) and transmit the moral principles of thrift, honesty and individual responsibility which ensure the development of sound business. They are also more inclined to allow beneficiaries to participate in the design and implementation of projects whereas state officials are often biased by the hierarchical approach characteristic of the administration.

As regards marginal populations, the State should be content to guide, co-ordinate, promote, stimulate and facilitate programmes, and leave the task of implementing them to those who know how to work at the grass-roots level. It should also establish a bridge between the formal vocational education system and traditional apprenticeship.

One example may serve as an illustration. Within the framework of its 1983-87 development plan, Colombia introduced a "national plan for the development of micro-enterprises" which co-ordinates and complements the work carried out by SENA and a number of private foundations which support the urban informal sector. The plan is operated by the National Evaluation Council which comprises the SENA, the private foundations and financial institutions, under the leadership of the Ministry of Planning. It provides a point of contact for public and private bodies which have for many years been

jealous of their respective spheres of action. An information system has been set up and educational material is being unified.

In conclusion, it can be said that the study of the cost-effectiveness of training is still at a very early and disappointing stage. Costs are generally poorly captured and basic data are often non-existent or unreliable. Effectiveness too is extremely difficult to measure. Sometimes it is possible to quantify it, but sometimes it may be almost impossible.

However, with all its imperfections, a study of the cost-effectiveness of training makes it possible to identify the main problems and desirable policies. The present chapter has touched on four key areas where reforms may be needed:

- to improve the utilisation of existing training institutions, in particular through economies of scale and better management;
- to transfer the burden of training to the shoulders of beneficiaries (enterprises, individuals) through tax systems and the charging of fees;
- to grant selective financial assistance to craftsmen and NGOs who have proved their capability to train workers in small enterprises and in the informal sector, and who are willing to improve further their training services. Craftsmen and NGOs should remain the principal trainers, having the State to provide incentives, lay down standards, and co-ordinate the work of the various organisations;
- to develop research and investment in new educational technologies to reach the greatest number of people at least cost while maintaining a minimum level of quality.

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